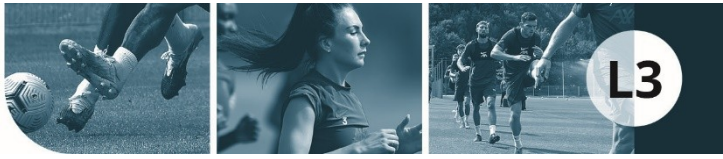
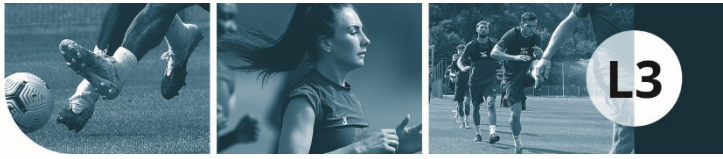


BTEC Assignment Brief

Qualification	Pearson BTEC International Level 3 Qualifications in Sport
Unit number and title	**Unit 8: Anatomy and Physiology for Exercise and Physical Activity**
Learning aims	A: Examine the function of the musculoskeletal system and how it responds to exercise and physical activity B: Explore the function of cardiorespiratory system and how it responds to in exercise and physical activity
Assignment title	A presentation evaluating the structure and function of the musculoskeletal and cardiorespiratory systems
Assessor	
Issue date	
Hand in deadline	

Vocational Scenario or Context	Your college/school has recently partnered with a professional rugby union team. The senior coach of the first team has an interest in anatomy and physiology and is keen for his players to learn more about their bodies and the impact of exercise to help increase their performance in training and competition. They have asked you to produce a presentation which evaluate the structure and function of the musculoskeletal and cardiorespiratory systems. This should include diagrams as well as information which the players can use to gain an understanding of the relationship of these systems and exercise.

Task 1	A presentation evaluating the structure and function of the musculoskeletal and cardiorespiratory systems, how these produce effective movement, including the effects of acute and long-term exercise on the systems and differences in this system in special populations You have been asked to produce a presentation which evaluates the interrelationships of the musculoskeletal and cardiorespiratory body systems in relation to short-term and long-term aerobic and anaerobic exercise performance. You will need to draw on a range of information to consider the significance of the structure and function of the cardiorespiratory and musculoskeletal systems, how they work together for one bout of aerobic and one bout of anaerobic exercise (which includes the pre-exercise effects which occur in the heart). You should explore the effects over an exercise period of around 30 minutes so that steady state has been attained. You should also demonstrate an in-depth understanding of how long-term adaptations support improved performance in both aerobic and anaerobic



Pearson | BTEC

- Types of contraction

Section 7: Muscle Fibre types

- Type I
- Type IIa
- Type IIb
- Characteristics
- Types of sports each are associated with

Section 8: Musculoskeletal systems responses to exercise

- Weight bearing exercise
- Joint stability
- Musculoskeletal response to acute exercise
- Increased blood supply to muscles
- Increase in muscle pliability
- Increased range of movement
- Muscle fibre micro tears
- Musculoskeletal response to chronic exercise

Section 9: Musculoskeletal system in special populations:

- Adolescent
- Ante and postnatal women
- Postural changes
- Effect of pregnancy
- Older adult

Section 10: Structure of the cardiovascular system

- Location of the heart
- Structure of the cardiovascular system

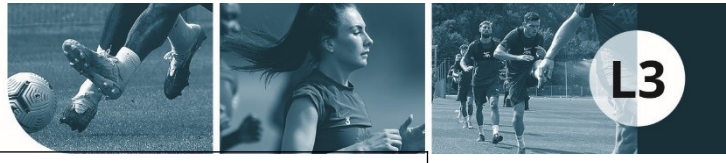
Section 11: Function of the cardiovascular system

- Blood flow through the heart
- One way valves in the heart
- Cardiac cycle
- Red blood cells
- Function of arteries, veins and capillaries
- Blood vessels leading into and out of the heart
- Blood pressure

Section 12: Structure of the respiratory system

- Location of the lungs
- Structure of the respiratory system
- Passage of air through the respiratory tract

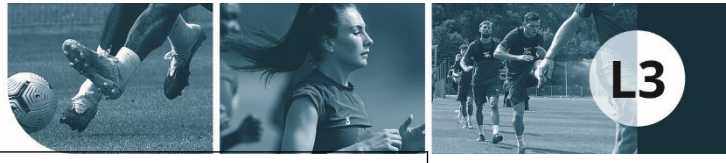
Section 13: Function of the respiratory system



	• Mechanics of breathing • Main muscles involved in breathing • Gaseous exchange of oxygen and carbon dioxide in the body • Link between the heart, lungs and muscles **Section 14: Lung volumes and control of breathing** • Tidal volume • Vital capacity • Residual volume • Neural control • Chemical control • Chemoreceptors **Section 15: Cardiorespiratory system responses to exercise** • Response to acute exercise • Cardiorespiratory responses to chronic aerobic exercise • Cardiorespiratory system differences between special population groups including children/young people, ante/postnatal and older adults

Criteria covered by this task:	
Unit/Criteria reference	To achieve the criteria, you must show that you are able to:
A.P1	Explain the structure and function of the skeletal system, including the different classifications of joints.
A.P2	Explain the function of the muscular system and the different fibre types, identifying the location of the major muscles in the human body.
A.P3	Explain the acute and chronic effects of aerobic and anaerobic exercise on the musculoskeletal system.
B.P4	Explain the structure and function of the cardiorespiratory system.
B.P5	Explain the acute and long term effects of aerobic and anaerobic exercise on the cardiorespiratory system.
A.M1	Assess how adaptations to the musculoskeletal, improve performance in aerobic and anaerobic exercise.
B.M2	Assess how adaptations to the cardiorespiratory system improve performance in aerobic and anaerobic exercise.
AB.D1	Evaluate the interrelationships of the musculoskeletal and cardiorespiratory body systems in relation to short-term and long-term aerobic and anaerobic exercise performance.

Checklist of evidence required	A presentation evaluating the structure and function of the musculoskeletal and cardiorespiratory systems, how these produce effective movement, including the effects of acute and long-term exercise on the systems and differences in this system in special populations. The information should cover the following: • Structure of skeletal system • Function of skeletal system • Structure and function of joints • Bone Structure and growth



	• Structure of muscular system • Function of muscular system • Muscle Fibre types • Musculoskeletal responses to exercise • Musculoskeletal system in special populations • Structure of cardiovascular system • Function of cardiovascular system • Structure of the respiratory system • Function of the respiratory system • Lung volumes and control of breathing • Cardiorespiratory system responses to exercise
Sources of information to support you with this Assignment	**Textbooks** Adams, M. et al – BTEC Level 3 National Sport (Performance and Excellence) Student Book (Pearson, 2016) ISBN 9781292134000 Barker, R. et al - BTEC Level 3 National Sport Book 1 (BTEC National Sport) Paperback (Pearson, 2010) ISBN-13: 978-1846906510 Tortora, G.J and Derrickson, B.H - Tortora's Principles of Anatomy and Physiology (May 2017) John Wiley & Sons; 15th Edition, Global edition (26 May 2017) ISBN-13 978-1119400066
Other assessment materials attached to this brief	